

REMARKS

The Final Office Action dated January 26, 2007 ("Office Action") has been received and noted. Claims 1-29, 31, 32 and 36 were examined. Claims 1-29, 31, 32 and 36 were rejected. Claims 21-29 are canceled. Claims 1 and 12 are amended. Support for amended claims 1 and 12 can be found in, for example, Figure 3C and accompanying text of the Application. As such, no new matter has been added. Claims 1-20, 31-32 and 36 remain in the application. Applicants request reconsideration of the pending claims in view of the above amendments and following remarks.

I. Claims Rejected Under 35 U.S.C. § 112, first paragraph

A. Written Description

Claims 12-18 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner alleges that the limitation of "an attack barrier layer formed between the second plug and the conductive patterns removes a gap formed when the second contact hole is formed" is not supported in the specification. Applicants have deleted this limitation and therefore request withdrawal of the rejection by the Examiner.

B. Enablement

Claims 12-18 were rejected under 35 U.S.C. § 112, first paragraph for being non-enabled. The Examiner alleges that the limitation of "an attack barrier layer formed between the second plug and the conductive patterns removes a gap formed when the second contact hole is formed" is not enabled within the specification. Applicants have deleted this limitation and therefore request withdrawal of the rejection by the Examiner.

II. Claims Rejected Under 35 U.S.C. § 112, second paragraph

Claims 12-18 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner alleges that the limitation of "an attack barrier layer formed between the second plug and the conductive patterns removes a gap formed when the second

contact hole is formed” is indefinite. Applicants have deleted this limitation and therefore request withdrawal of the rejection by the Examiner.

III. Claims Rejected Under 35 U.S.C. § 103

A. Claims Rejected as Obvious over the AAPA in view of *Tran*

Claims 1-11, 31, 32 and 36 were rejected under 35 U.S.C. §103(a) as being obvious over Applicants’ Admitted Prior Art (“AAPA”) in view of U.S. Patent No. 5,942,801 to Tran (“*Tran*”). In order to establish a *prima facie* case of obviousness: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference; (2) there must be a reasonable expectation of success; and (3) the references when combined must teach or suggest all of the claim limitations. MPEP § 2142. Applicants respectfully submit that a *prima facie* case of obviousness has not been established.

More specifically, the cited references do not teach or suggest all of the limitations of independent claims 1 and 12. Amended independent claims 1 and 12 include the limitation of “forming an attack barrier layer on *an entire surface* of a resulting structure . . . wherein the attack barrier layer removes *a plurality of gaps* in the etch stop layer which occur during the planarizing process and the cleaning process.” (App., claims 1, 12). Representatively, the Application states, “an attack barrier layer 31 is deposited on an entire surface of the resulting structure [FIG. 3B] . . . to prevent an electric short circuit between a subsequent second plug 32, i.e., a storage node contact plug, and the gate electrode pattern G.” (App., pp. 20-21, Ins. 24-26; 1-2). As a result, “the attack barrier layer 31 is formed in a manner to be filled into the lost portion A of the oxide layer 23B.” (App., p.21, Ins. 8-10). As shown in Figures 3B and 3C of the Application, “lost portion A” represents a plurality of lost portions indicated by multiple arrows originating from “lost portion A.” (App., FIGs. 3B-3C).

By contrast, the AAPA describes a device in which a conductive material is deposited within contact hole 21 to form storage node contact plug 22. (App., p.8, Ins. 4-6). The conductive material is additionally deposited within a gap formed within etch stop layer S, which gap is created during a prior cleaning process. (App., FIG. 1D). This conductive material causes

electrical short C. (App., p.8, Ins. 13-14; FIG. 1D). Thus, the AAPA does not teach or suggest all of the limitation of claims 1 and 12, namely, forming an attack barrier layer on *an entire surface* of a resulting structure wherein the attack barrier layer removes *a plurality of gaps* in the etch stop layer which occur during the planarizing process and the cleaning process. (See App., claims 1, 12). *Tran* does not cure this lack of teaching or suggestion because *Tran* only describe an embodiment in which a single through-hole 65 is lined with adhesion promoting layer 67, filling a gap in HSQ layer 62 and optional oxide layer 63 adjacent to metal feature 61. (col. 6, Ins. 18-44; FIG. 6). Accordingly, Applicants submit that independent claims 1 and 12 and their respective dependent claims are allowable over the cited references.

B. Claims Rejected as Obvious over the AAPA in view of Jiang

Claims 21-29 were rejected under 35 U.S.C. §103(a) as being obvious over the AAPA in view of U.S. Publication No. 2002/0055256 to Jiang (“*Jiang*”).

Claims 21-29 are cancelled therefore the rejection to these claims on this basis is moot.

CONCLUSION


In view of the foregoing, Applicants believe that all claims now pending patentably define the subject invention over the prior art of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being submitted electronically via EFS Web to the United States Patent and Trademark Office on March 12, 2007.


Si Vuong